Paper No. 23

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

Ex parte NOBUYOSHI ASANUMA

_____

Appeal No. 96-1920
Application 08/218,136[1]

_____

HEARD: APRIL 8, 1999

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Before KRASS, JERRY SMITH and RUGGIERO, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1 and 3-12, which constitute all the claims remaining in the application.

[1] Application for patent filed March 25, 1994.

The disclosed invention pertains to a control system for controlling the steering device of a vehicle. More particularly, the invention estimates the driving skill of a vehicle operator and uses this estimate to determine a level of intervention for the control system. In this manner the level of intervention for an automatic control system can be decreased as the operator's skill level increases.

Representative claim 1 is reproduced as follows:

1. A system for controlling a vehicle steering device according to an operating condition of a vehicle, comprising:

means for detecting an operating condition of said vehicle;

means for controlling said vehicle steering device according to data on said operating condition detected by said detecting means;

means for estimating a driving skill of a vehicle operator according to an operation executed by said vehicle operator;

means for modifying a property of said controlling means according to said driving skill estimated by said driving skill estimating means;

said operating condition includes at least one of a yaw movement and a lateral acceleration of said vehicle; and

a level of intervention of said control means on said steering device is decreased when said estimated driving skill is relatively high.

The examiner relies on the following references:

Furukawa et al. (Furukawa)	4,412,594	Nov. 01, 1983
Nishikawa et al. (Nishikawa)	4,949,268	Aug. 14, 1990
Takahashi (Takahashi '997)	5,162,997	Nov. 10, 1992
Takahashi (Takahashi '785)	5,172,785	Dec. 22, 1992

The following rejections have been made against the claims and are on appeal before us:

1. Claims 9-12 stand rejected under 35 U.S.C. § 112, first paragraph, based on the disclosure being inadequate to support claims directed to use of a global positioning system.

2. Claims 8-12 stand rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the invention.

3. Claims 1, 3 and 5-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the disclosure of Furukawa.

4. Claims 4 and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Furukawa taken alone.

5. Claims 8, 9, 11 and 12 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of

Furukawa in view of Nishikawa.

6. Claim 1 stands rejected under 35 U.S.C. § 102(e) as being anticipated by the disclosure of Takahashi ’997.

7. Claim 1 stands rejected under 35 U.S.C. § 102(e) as being anticipated by the disclosure of Takahashi ’785.

8. Claims 3-7 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Takahashi ’785 in view of Furukawa.

9. Claims 8-12 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Takahashi ’785 in view of Furukawa, and further in view of Nishikawa.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner, the arguments in support of the rejections and the evidence of anticipation

and obviousness relied upon by the examiner as support for the prior art rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the specification and the claims comply with the requirements of the first and second paragraphs of 35 U.S.C.
§ 112. We are also of the view that none of the examiner's prior art rejections is adequately supported by the prior art of record in this case except for the rejection of claim 1 under 35 U.S.C.
§ 102(e) as anticipated by Takahashi '785. Accordingly, we affirm-in-part.

We consider first the rejection of claims 9-12 under the first paragraph of 35 U.S.C. § 112. The examiner asserts that the present disclosure is not sufficient to enable one of ordinary skill in the art to use a global positioning system

(GPS) to determine actual and target trajectories in order to control steering as claimed [answer, pages 2-3]. The examiner also questions the accuracy of GPS systems for use in the instant invention and questions whether there are preprogrammed maps provided to users of GPS [id., pages 11-13].

Appellant argues that the Nishikawa GPS system, which is cited by the examiner, "would be sufficient for determining if a vehicle had strayed from the dimensions of a given road, and would be sufficient for determining a target travel trajectory according to the present invention" [brief, page 12]. Appellant

also argues that the examiner bases his position on his alleged personal knowledge which has not been properly factually supported on this record [reply brief].

The examiner has the burden of giving reasons, supported by the record as a whole, why the specification is not enabling. Showing that the disclosure entails undue experimentation is part of the examiner's initial burden. In

re Angstadt, 537 F.2d 498, 504, 190 USPQ 214, 219 (CCPA 1976). The examiner's position is based on his personal assessment of the capabilities of GPS systems. Appellant has argued that the GPS system of the cited prior art could be used to implement the claimed invention.

We will not sustain this rejection. First, we note that only claims 9 and 12 recite a GPS system. Dependent claims 10 and 11 are not directed to this area of the invention. Second, we agree with appellant that the examiner has not properly supported his assertion of nonenablement in this case. The claims merely recite that a reference travel trajectory is determined from data given from a preprogrammed map of a GPS. We see no reason why the artisan would have difficulty preparing a preprogrammed map of an area based on GPS data. Once the map is generated, a path on the map can be monitored and a reference trajectory can be easily determined as asserted by appellant. On this record we find no support for the examiner's position that the disclosure is not enabling. Therefore, we do not sustain this rejection of claims 9-12.

We next consider the rejection of claims 8-12 under the second paragraph of 35 U.S.C. § 112. The examiner's rejection states the following:

> Claims 8,9 and 11,12 claim a GPS system forming the reference path of the vehicle. The claims are rejected for the same reason as in the 112, first paragraph rejection above [answer, page 4].

Appellant argues that the claims would be clearly understood by persons of ordinary skill in the art, especially when considered in light of the disclosure [brief, pages 14-15].

The general rule is that a claim must set out and circumscribe a particular area with a reasonable degree of precision and particularity when read in light of the disclosure as it would be by the artisan. In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed in light of the specification. Seattle Box Co. v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984).

We will not sustain this rejection because the examiner has offered no explanation as to why the claims are indefinite within the meaning of the second paragraph of 35 U.S.C. § 112. The examiner states that this rejection is made for the same reasons as the rejection under the first paragraph of 35 U.S.C.
§ 112, but we see no basis for using the alleged nonenablement of the disclosure to reject claims as being indefinite. Nevertheless, we agree with appellant that the artisan having considered the specification of this application would have no difficulty ascertaining the scope of the invention recited in claims 8-12. Therefore, we do not sustain this rejection of claims 8-12.

We now consider the rejection of claims 1, 3 and 5-7 under 35 U.S.C. § 102(b) as being anticipated by the disclosure of Furukawa. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v.

Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and

Assocs. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

The examiner has indicated how he reads independent claim 1 on the disclosure of Furukawa [answer, page 4]. Appellant argues that “the Furukawa reference does not disclose or in any way suggest means for estimating the driving skill of the vehicle operator as defined by independent claim 1" [brief, page 15]. The examiner responds that Figures 2A and 2B of Furukawa disclose skill level of a vehicle operator, and this data is used to control automobile steering [answer, pages 13-14]. Appellant argues that Furukawa does not detect or estimate a driver’s skill level nor use this information to control steering compensation [reply brief].

We will not sustain this rejection. Appellant is absolutely correct that Furukawa does not disclose a means for

estimating a driving skill of a vehicle operator nor the modification of a property of the controlling means according to this estimated driving skill. Furukawa merely uses the graphs of three skill levels to select a steered angle ratio for use with all drivers. The skill of any single driver is not measured in Furukawa, and consequently, no modification of the control in Furukawa is based on the individual skill level of the vehicle

operator. Therefore, Furukawa does not fully meet the invention of independent claim 1. Therefore, we do not sustain this rejection of claims 1, 3 and 5-7.

We now consider the rejection of claims 4 and 10 under 35 U.S.C. § 103 as unpatentable over the teachings of Furukawa taken alone and the rejection of claims 8, 9, 11 and 12 under 35 U.S.C. § 103 as unpatentable over the teachings of Furukawa in view of Nishikawa. Each of independent claims 1, 8 and 9 on appeal recites either a means for estimating a driving skill of

a vehicle operator [claim 1] or a means for evaluating driving skill based on a comparison [claims 8 and 9]. As we noted above, Furukawa does not disclose or suggest either of these features
of the claimed invention. Nishikawa does not overcome this deficiency in Furukawa. Therefore, we do not sustain the examiner's rejection of these claims under 35 U.S.C. § 103.

We now consider the rejection of claim 1 under 35 U.S.C. § 102(e) as being anticipated by the disclosure of Takahashi '997. The examiner indicates how he reads claim 1 on the disclosure of Takahashi '997 on pages 6-7 of the answer. Appellant argues that Takahashi '997 "does not include or in any way suggest means for estimating a driving skill of the vehicle operator according to an operation executed by the operator" [brief, page 18]. The examiner responds that Takahashi '997 teaches a means for learning a driver's unique characteristics and a control output which recalls the relationship between vehicle driving parameters and the personal driving characteristics of the driver [answer, page 15]. Appellant argues that Takahashi '997 never

estimates the driver's driving skill nor specifically estimate the skill according to an operation executed by the driver as required by claim 1 [reply brief, page 10].

We will not sustain this rejection. We agree with the arguments offered by appellant. The driving characteristics stored in Takahashi '997 are not an estimation of the driving skill of a vehicle operator. Although it may be possible to make this determination based on the stored data, Takahashi '997 never discloses or suggests that this data is used to estimate the driving skill of the operator. Takahashi '997 simply allows control of a vehicle to be based on an operator's previous driving habits at the option of the driver. Although the driving habits of a vehicle operator may be evidence of his driving skill, Takahashi '997 does not estimate this skill or adjust the

level of control based on the individual skill level of the operator. Since Takahashi '997 does not fully meet the invention of claim 1, we do not sustain this rejection of

claim 1.

We now consider the rejection of claim 1 under 35 U.S.C. § 102(e) as being anticipated by the disclosure of Takahashi ’785. The examiner indicates how he reads claim 1 on the disclosure of Takahashi ’785 on pages 7-8 of the answer. Appellant argues that Takahashi ’785 “does not include a control means for controlling a steering device according to a detected vehicle operating condition such as yaw rate and/or lateral acceleration, as well as means for modifying a property of the controlling means based on an estimated driver’s skill level as claimed” [brief, pages 18-19]. The examiner responds that Takahashi ’785 determines a driver’s skill level and uses this determination to adjust the level of control [answer, page 15]. Appellant argues that Takahashi ’785 controls the vehicle steering system exclusively based on detected data of a driver’s steering input to a steering wheel rather than on an actual operating condition of the vehicle [reply brief, pages 11-12]. Appellant also argues that the intervention in Takahashi ’785 may not necessarily decrease the level of control based on the

skill of the operator.

We will sustain this rejection of claim 1. Takahashi '785 discloses one embodiment for controlling vehicle steering, a second embodiment for controlling vehicle braking, and a third embodiment for controlling vehicle acceleration. We are concerned only with the vehicle steering embodiment. Takahashi '785 discloses that his control system receives steering angle 2 as an input signal and produces a control signal as an output signal based on a transfer function [column 4, lines 42-46]. The transfer function characteristics are adjusted based on estimated steering characteristics determined by monitoring actual operations executed by a driver.

We consider the commanded steering angle in Takahashi '785 to be an operating condition of the vehicle. Since steering angle is a demand for yaw movement, we consider the steering angle in Takahashi '785 to meet the claim recitation of <u>at least one</u> of a <u>yaw movement</u> and a lateral acceleration of the vehicle. Appellant's argument that Takahashi '785 does not disclose yaw rate is not commensurate in scope with the

invention of claim 1. We are also not persuaded by appellant's argument that the level of intervention in Takahashi '785 may not always correspond to the actual skill level of the operator. Even though Takahashi '785 allows for age to be considered, which may not always directly correlate to a driver's skill level, it is clear that Takahashi '785 discloses a system in which the desired result is to make the vehicle easier to operate for an unskilled driver [see abstract]. Therefore, Takahashi '785 discloses the control operation recited in claim 1 even though his preferred embodiment also uses age which does not always correlate to skill level. The thrust of his invention is to decrease the level of intervention when the driving skill is relatively high.

Based on our discussion above, we conclude that the invention as broadly recited in claim 1 is fully met by the disclosure of Takahashi '785. Therefore, we sustain this rejection of claim 1.

We now consider the rejection of claims 3-7 under 35 U.S.C. § 103 as being unpatentable over the teachings of

Takahashi '785 in view of Furukawa. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the actual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732

F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

The examiner has addressed the recitations of these claims and the obviousness of the differences between these claims and Takahashi '785 on pages 8-10 of the answer. Although appellant's argument that Takahashi '785 is deficient has been decided adversely to appellant as discussed above, appellant also argues that there is no suggestion to combine the teachings of Takahashi '785 with Furukawa except for the examiner's improper hindsight suggestion [brief, pages 19-22]. The examiner responds that the references are combinable because both references deal with the subject matter of controlling steering. Appellant argues that the examiner's reasoning does not establish a prima facie case of obviousness.

We agree with appellant. In our view, the manner in which Takahashi '785 and Furukawa control steering is so

different that there would be no motivation to use Furukawa's technique in the Takahashi '785 steering control system. As appellant points out, Furukawa is uniquely designed for use in a system where the steered angle ratio between the rear and front wheels is modified based on various operating parameters of the vehicle. Thus, Furukawa is uniquely concerned with a vehicle having steering wheels in the front and the back and with the controlling of the rear steering wheels based on the measured operating parameters. We agree with appellant that there is no suggestion within the applied references to apply teachings of Furukawa to the Takahashi '785 control system. Therefore, we do not sustain this rejection of claims 3-7.

We now consider the rejection of claims 8-12 under 35 U.S.C. § 103 as being unpatentable over the teachings of Takahashi '785 in view of Furukawa, and further in view of Nishikawa. The examiner has addressed the recitations of these claims and the obviousness of the differences between these claims and the applied references on pages 10-11 of the answer. Appellant again argues that there is no suggestion to combine the teachings of Takahashi '785 with Furukawa and

Nishikawa except for the examiner's improper hindsight suggestion [brief, page 22]. In addition to the repeated arguments of the examiner and appellant, appellant also argues that none of the references discloses or suggests the integrating of a deviation between a reference trajectory and an actual trajectory and a comparison of this integration as recited in these claims [reply brief, page 16].

We agree with all of appellant's arguments. Specifically, even though we have previously determined that Takahashi '785 does determine or estimate the driving skill of the vehicle operator, there is no disclosure in Takahashi '785 of how this
is done except that fuzzy linguistic inference rules are used. There is no suggestion in Takahashi '785 that the specific operations recited in claims 8-12 are performed. Therefore, we do not sustain this rejection of claims 8-12 under 35 U.S.C.
§ 103.

In summary, we have not sustained any of the examiner's rejections of the claims except for the rejection of claim 1 under 35 U.S.C. § 102(e) as anticipated by the disclosure of Takahashi '785. Accordingly, the decision of the examiner rejecting claims 1 and 3-12 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

ERROL A. KRASS Administrative Patent Judge	)	
JERRY SMITH Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOSEPH F. RUGGIERO Administrative Patent Judge	)	

JS/cam

Appeal No. 96-1920
Application 08/218,136

CARRIER, BLACKMAN & ASSOCIATES, P.C.
24101 Novi Road, Suite 100
Novi, MI 48375